

THE USE OF STATE-CHANGE MATERIALS IN REFORMABLE SHAPES, TEMPLATES OR TOOLING

ABSTRACT OF THE DISCLOSURE

Techniques for generating a stable, force-resisting positive or negative representation of a shape. A state-changeable mixture comprises uniform, generally ordered, closely-spaced solid bodies and a liquid carrier medium of relatively similar density, with the liquid medium filling any voids or interstices between the bodies and excluding air or gas bubbles from the mixture. Within the mixture, the solid bodies can be caused to transition from a near-liquid or fluent condition of mobility to a stable, force-resisting condition through introduction and then extraction of a slight excess quantity of the carrier medium. To create mobility, this excess quantity or transition liquid is introduced to create a fluent condition by providing a slight clearance between the bodies which permits the gently-forced introduction of at least two simultaneous slip planes between ordered bulk masses of the bodies at any point in the mixture. Transition to the stable condition is caused by extraction of the transition liquid, removing the clearance between bodies and causing them to make stable, consolidated contact.